

### Congratulations!

You have just become the owner of one of the finest antennas available. Before beginning assembly, please check all parts against the Parts List (Page 2).

Before any antenna is put into stock at Wilson Systems, Inc., it goes through a complete quality control check. The final step in this process is a weight check to assure that all parts are present.

In each Hardware Bag, you will find a small tag with an inspector number. On the top of each antenna carton, you will find a date/weight stamp with date of packaging, weight and the weigher's initials.

In the unlikely event you receive an antenna with a defective or missing part, please contact our Customer Service Department. We will need the Quality Control Information mentioned above to properly serve you and to correct any quality problems we may have.

After all parts are accounted for, you will need the following tools for assembly:

1. A pencil or other marker.
2. A carpenter's level.
3. A standard blade screwdriver.
4. A 3/8" wrench or ratchet with 3/8" socket.
5. (2) 7/16" wrenches or one 7/16" wrench and one ratchet with 7/16" socket.
6. A 1/2" wrench or ratchet with 1/2" deep socket.
7. A good metal tape measure at least 16 ft. long.

In this antenna kit, you will find a bag of Penetrox. This substance should be applied to all tubing which is telescoped into another section of tubing at points of contact. Before applying the Penetrox, roughen the surface to which the compound is to be applied with a fine grade of sandpaper or steel wool. Cut one corner off the bag and work the Penetrox into and out of this corner. Apply a thin film to the prepared tubing, then assemble as per the instructions. The Penetrox will prevent corrosion build-up between telescoped aluminum tubing.

All Wilson amateur antennas are supplied with Poly Rope to be installed inside the elements. When installed inside an element, the rope absorbs vibrations caused by continuous ground vibrations and winds. (Trapped elements do not require the rope since these vibrations are absorbed by the traps.)

We would like to know what you think of our antennas! Of prime importance to us is your valued opinion as to quality of materials used and workmanship. We would also appreciate your comments on performance. Towards the end of this manual you will find a graph for plotting SWR curves with room for any additional notes you may wish to make. You will also find a questionnaire. We would appreciate it if you would fill it out and return it to us. Remember! . . . We want to give you a top quality product at a good price and comments towards that end are always welcomed here at Wilson Systems, Inc.

# PARTS LIST SYSTEM 36

PART	QTY	Q.D.	SIZE	LENGTH	DESCRIPTION	CHECK LIST
T113P	2	2"	.057"	69-3/4"	Alum. Tubing slotted one end	
T32P	2	2"	.057"	80"	Alum. Tubing swaged 4 1/2" one end	
T53	1	1.845"	.060"	80"	Alum. Tubing	
T27P	6	1-1/4"	.049"	36"	Alum. Tubing slotted one end	
T20P	6	1-1/8"	.049"	64"	Alum. Tubing swaged & slotted one end to accept 7/8" O.D. tubing	
T19P	2	7/8"	.049"	48"	Alum. Tubing swaged & slotted one end to accept 5/8" O.D. tubing	
T102P	4	7/8"	.049"	24"	Alum. Tubing swaged & slotted one end to accept 5/8" O.D. tubing	
T116P	2	7/8"	.049"	41"	Alum. Tubing slotted one end	
T98P	2	7/8"	.049"	28"	Alum. Tubing slotted one end	
T107P	2	7/8"	.049"	12-1/2"	Alum. Tubing slotted one end	
T14P	6	5/8"	.049"	36"	Alum. Tubing slotted one end	
T108P	2	5/8"	.049"	43"	Alum. Tubing	
T73P	2	5/8"	.049"	30"	Alum. Tubing	
T109P	2	5/8"	.049"	48"	Alum. Tubing	
T02	4	1/2"	.042"	60"	Alum. Tubing	
T03	2	1/2"	.042"	48"	Alum. Tubing	
T115P	2	3/8"	.035"	48"	Alum. Tubing flattened & pierced one end	
P01P	1		1/4" x 8"	8"	Boom-to-Mast Plate	
V03P	1		1" x 1"	24"	Guy Support	
BE6P	2				Boom-to-Element Plates (for insulators)	
BE7P	4				Boom-to-Element Plates (for 1 1/2" tubing)	
BE8P	6				Boom-to-Element Plates (for 7/8" tubing)	
TA8P	2				Radiator Traps (orange)	
TA7P	2				Reflector Traps (brown)	
TA8P	2				Director Traps (yellow)	
WD2P	1			25'	5/16 steel guy cable	
PR60	1			60'	Polypropylene rope	
RFC1	1				RF choke	

## HARDWARE BAG NO. 1

N01	34	5/16"-18	Hex Nuts
N21	49	1/4"-20	Hex Nuts
N25	2	12-24	Hex Nuts
N06	3	10-24	Hex Nuts
N02	30	5/16"	Lockwashers
N22	49	1/4"	Lockwashers
N14	2	No. 12	Lockwashers
N28	5	No. 10	Flatwashers
N12	3	No. 10	Lockwashers
S49	49	1/4" x 7/8"	Hex Bolts
S39	12	1/4" x 1/2"	Hex Bolts
N16P	4	5/16" x 4"	Eye Bolts (welded)
S32	2	12-24 x 3/4"	Machine Screws
S27	30	12-24 x 1/2"	Machine Screws
S21	9	10-24 x 1/2"	Machine Screws
N23	12	1/4-20	Square Nuts
N13	32	12-24	Square Nuts
N11	6	10-24	Square Nuts
PL2	6	7/16"	Plastic Cap, black
PL3	6	5/8"	Plastic Cap, black
PL5	1	2"	Plastic Cap, black
PL6R	1	2"	Plastic Cap, red
F02	2	1-1/4"	Insulator Sleeves
C01	2	3/8"	Alum. Clamps-D8
W14P	8	1-1/4"	Alum. Clamps
W10P	8	1"	Alum. Clamps
W78P	5	7/8"	Alum. Clamps
W34P	12	3/4"	Alum. Clamps
W58P	6	5/8"	Alum. Clamps
Z14P	1	1/2" x .060"	Beto Rod Strap
C16P	1	2"	Boom Strap
PE1	2		Bag Penetrox

## HARDWARE BAG NO. 2

S01	13	2"	Saddles
BG2P	2	2"	Boom Guy Support Mounts

## HARDWARE BAG NO. 3

U01	13	2"	U-Bolts
SY36	1		Set of Instructions

# SYSTEM 36

## 20, 15, 10 METERS TRIBANDER

Band MHz	14-21-28	Longest Element:	28' 6 1/2"
Maximum power input	legal limit	Turning radius	19' 1"
Gain (dBd)	up to 9 dB	Maximum mast diameter	2" O.D.
VSWR at resonance	1.1:1	Surface area	8.6 sq. ft.
Impedance	50 ohms	Wind loading at 80 mph	216 lbs.
F/B ratio	up to 20 dB	Assembled weight (approx.)	63 lbs.
Boom (O.D. x length)	2" x 24' 2 1/2"	Shipping weight (approx.)	62 lbs.
No. elements	6	Maximum wind survival	100 mph

## PRELIMINARY INSTRUCTIONS

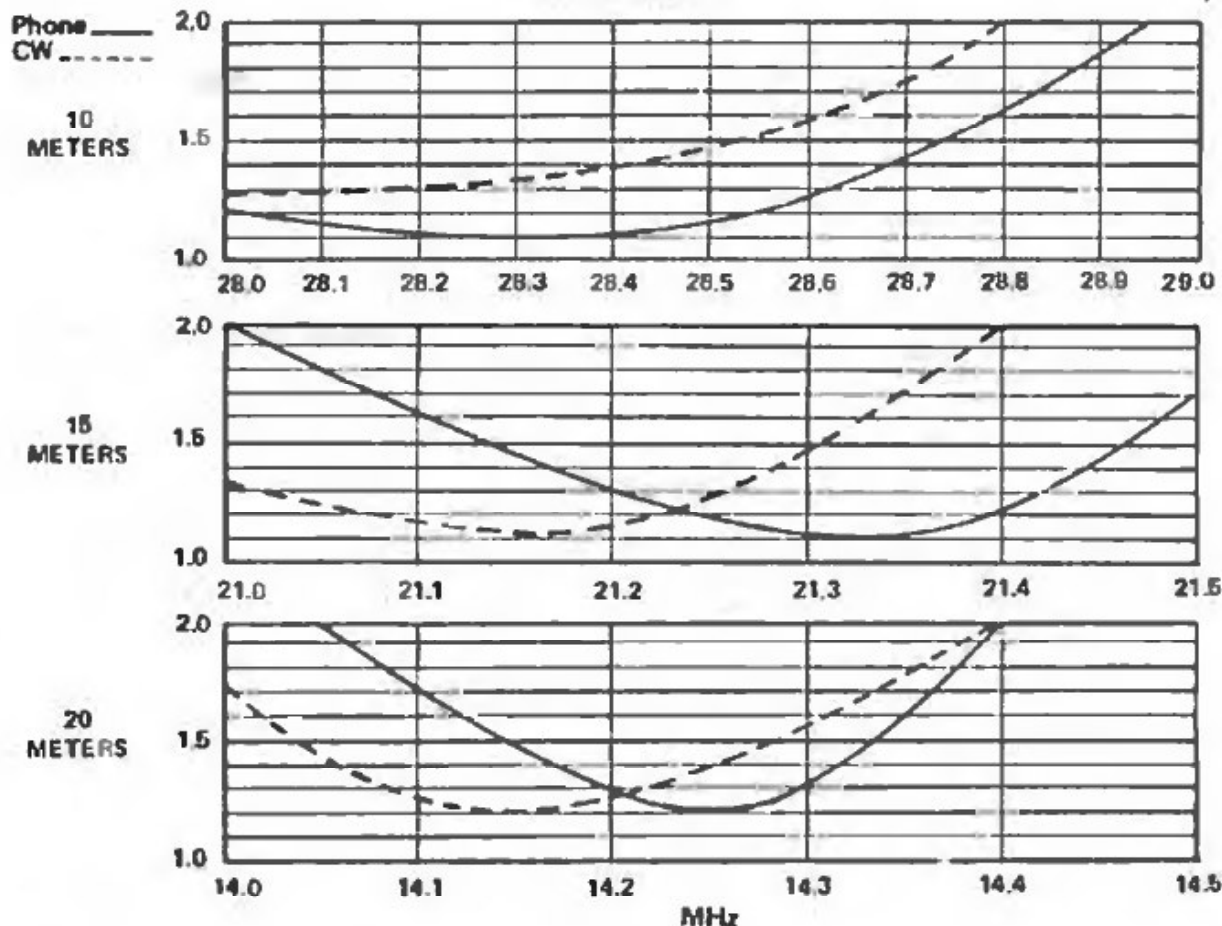
For the best results and the best use of your time, familiarize yourself with all parts and instructions before beginning assembly.

Begin assembly by unpacking everything and checking all your parts against the parts list. Do not proceed until you have determined that you have everything on the list, and each item in the quantity specified. If anything is missing, contact the Customer Service Dept. at Wilson Systems immediately, and tell us exactly what is missing. Do not begin assembling your antenna until you have all parts in hand.

Read your instructions completely, and be sure you understand them, before you start. Do not begin assembly until you are sure you have ample time to finish — a partially completed antenna is especially prone to damage, and parts scattered around are easily lost.

If you lose or damage any parts, or have any problems you cannot work out by yourself, call us! We have experienced dedicated people who understand your problems and are anxious to help you.

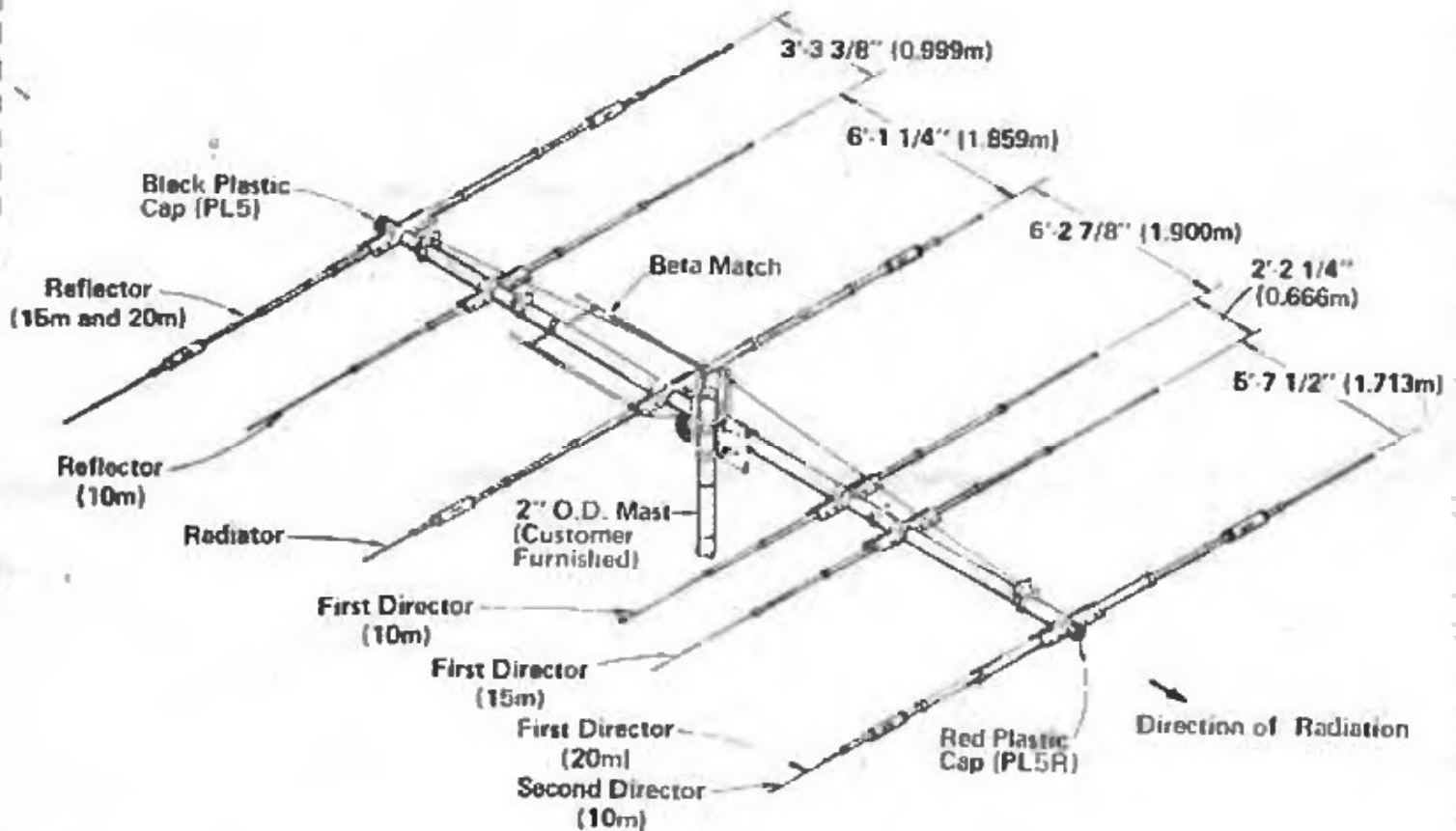
## SWR CURVES



# OVERALL DIMENSIONS

	Phone	CW
Reflector (15m and 20m)	29' 2 1/2" (8.896m)	29' 6 1/2" (8.997m)
Reflector (10m)	17' 10" (5.431m)	17' 10" (5.431m)
Radiator	24' 6" (7.461m)	24' 8" (7.513m)
1st Director (10m)	16' 7" (5.050m)	16' 7" (5.050m)
1st Director (15m)	21' 1" (6.420m)	21' 1" (6.420m)
1st Director (20m)	25' 6 3/4" (7.785m)	25' 6 3/4" (7.785m)
2nd Director (10m)		

For exact element dimensions see Figure 4.



## BASIC ASSEMBLY PROCEDURE:

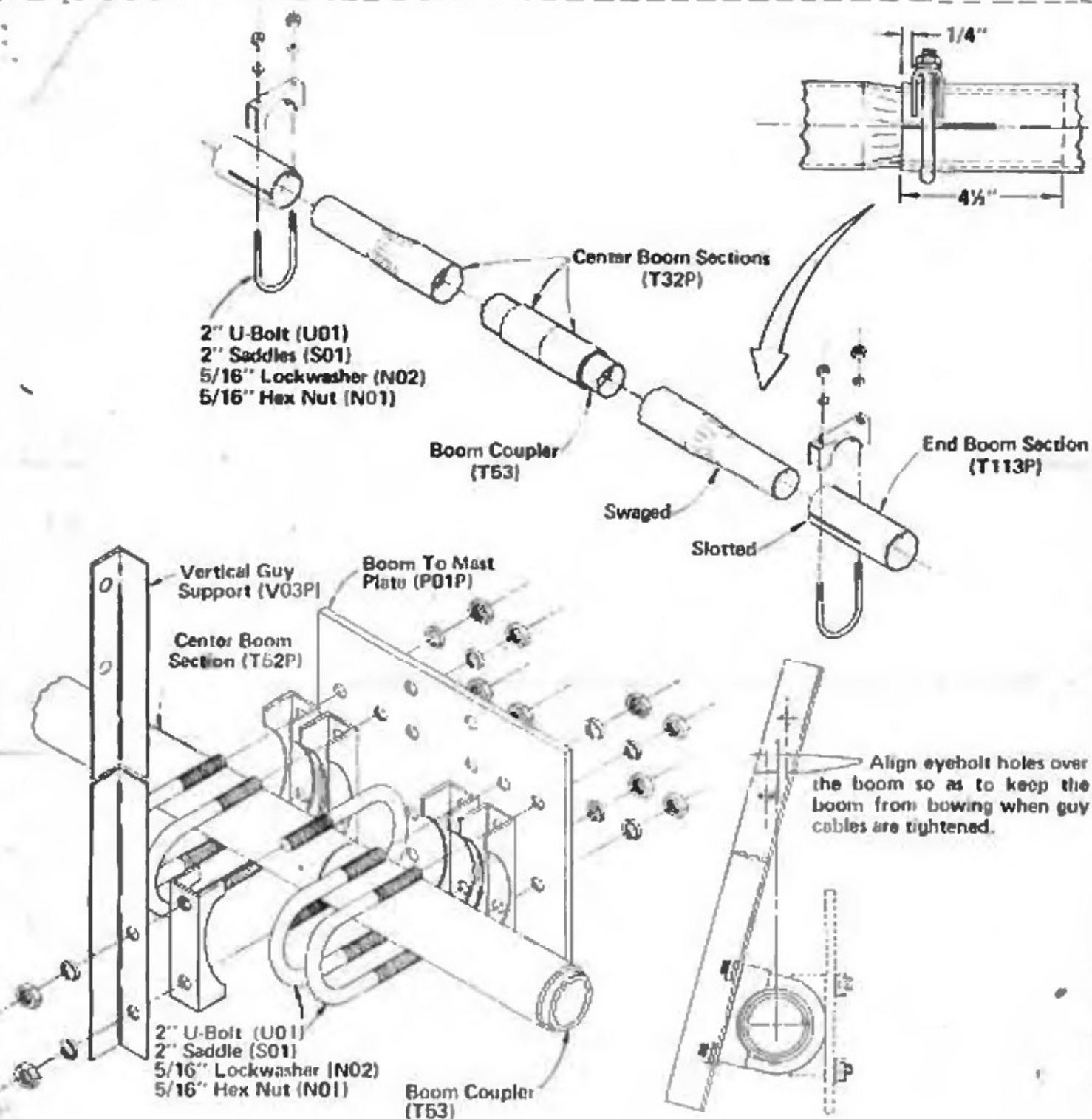
This figure shows what the antenna should look like when assembled. Specific assembly details are shown on following pages. Your basic order of assembly should be:

1. Put the boom together as shown in Figure 2.
2. Then assemble each element as shown in Figures 3, 4 and 5. Do the driven element first; and then each of the others in any order you choose. Mount each element loosely on the boom as soon as it is assembled. Locate them only approximately, and do not put the plastic caps on the ends at this time.
3. After the elements are all in place, move them to their exact positions, set them square to the boom and parallel to each other, and tighten all bolts and clamps. Recheck all dimensions, and correct any errors.
4. Install the guy cables per Figure 8A.
5. Recheck all dimensions again, and check the tightness of all bolts and clamps. Coat all bolts, screws, and nuts with silicon sealant. Put plastic caps on the ends of boom and elements.
6. Attach your coaxial cable to the balun as illustrated, and secure to the boom with tape.
7. Install the antenna on the mast per Figure 8B. Dress your coaxial cable down the mast and secure in several places with tape.

Figure 1

DRAWN MT  
APPROVED MT

**SY36**



#### BOOM ASSEMBLY:

First mark the center of the 80" (2.032m) alum. tubing (T53). Slide the unswaged ends of the center boom sections (T32P) over each end of the coupler so that they butt in the center. Attach the boom-to-mast plate (P01P) and the vertical guy support (V03P) at the boom center using 2" u-bolts, saddles and hardware as shown above. Be sure to slip the 2" u-bolt for attaching guy support over boom before securing mast plate.

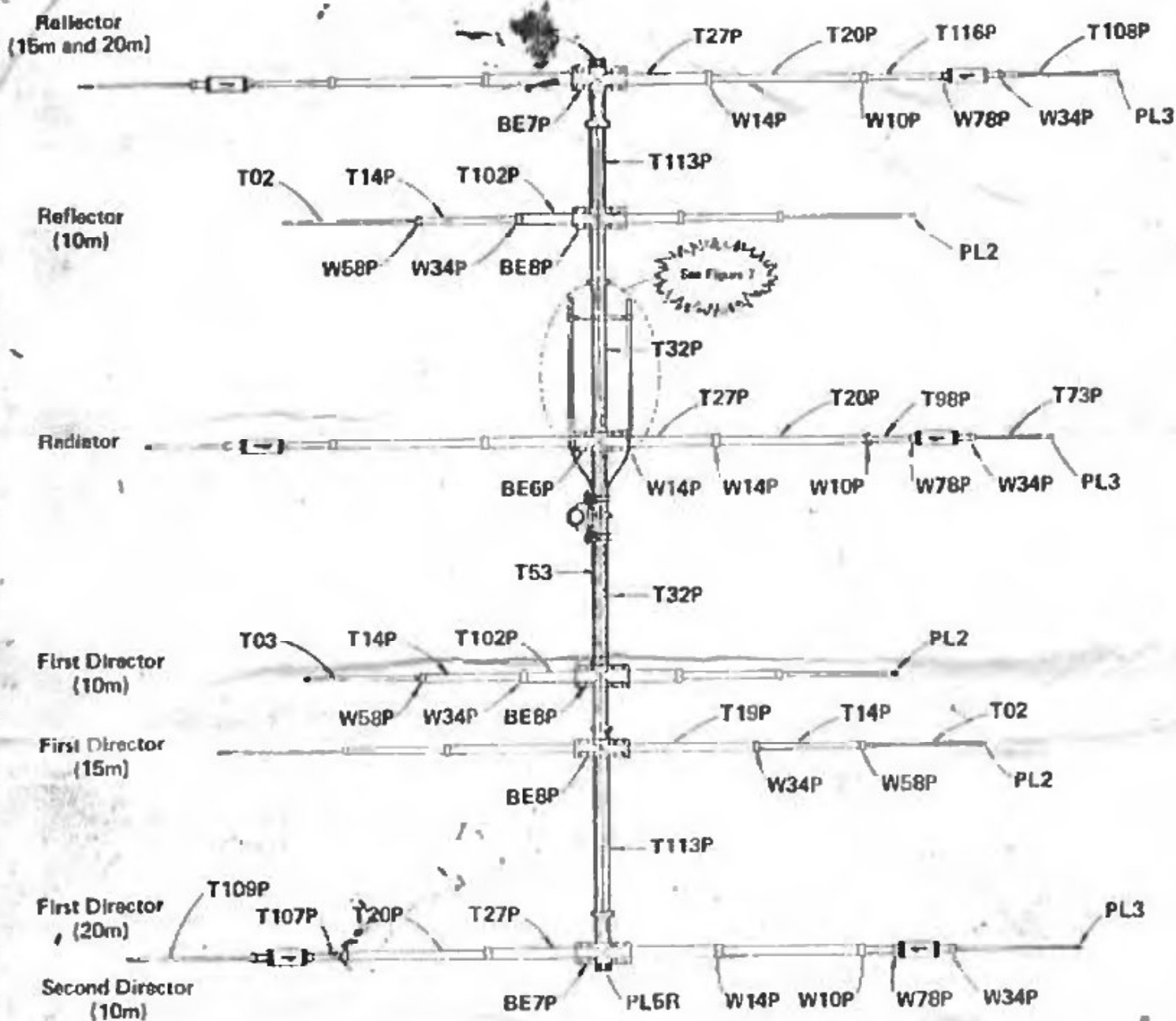
Slide the slotted ends of the end boom sections (T113P) 4 1/2" (0.114m) over the swaged ends of the center boom sections and secure in the same manner as above. The overall length of the boom should be 24' 2 1/2" (7.373m).

FIGURE 2

SY36

DRAWN HTB  
APPROVED HTB





### PARTS IDENTIFICATION

### ELEMENT ASSEMBLY:

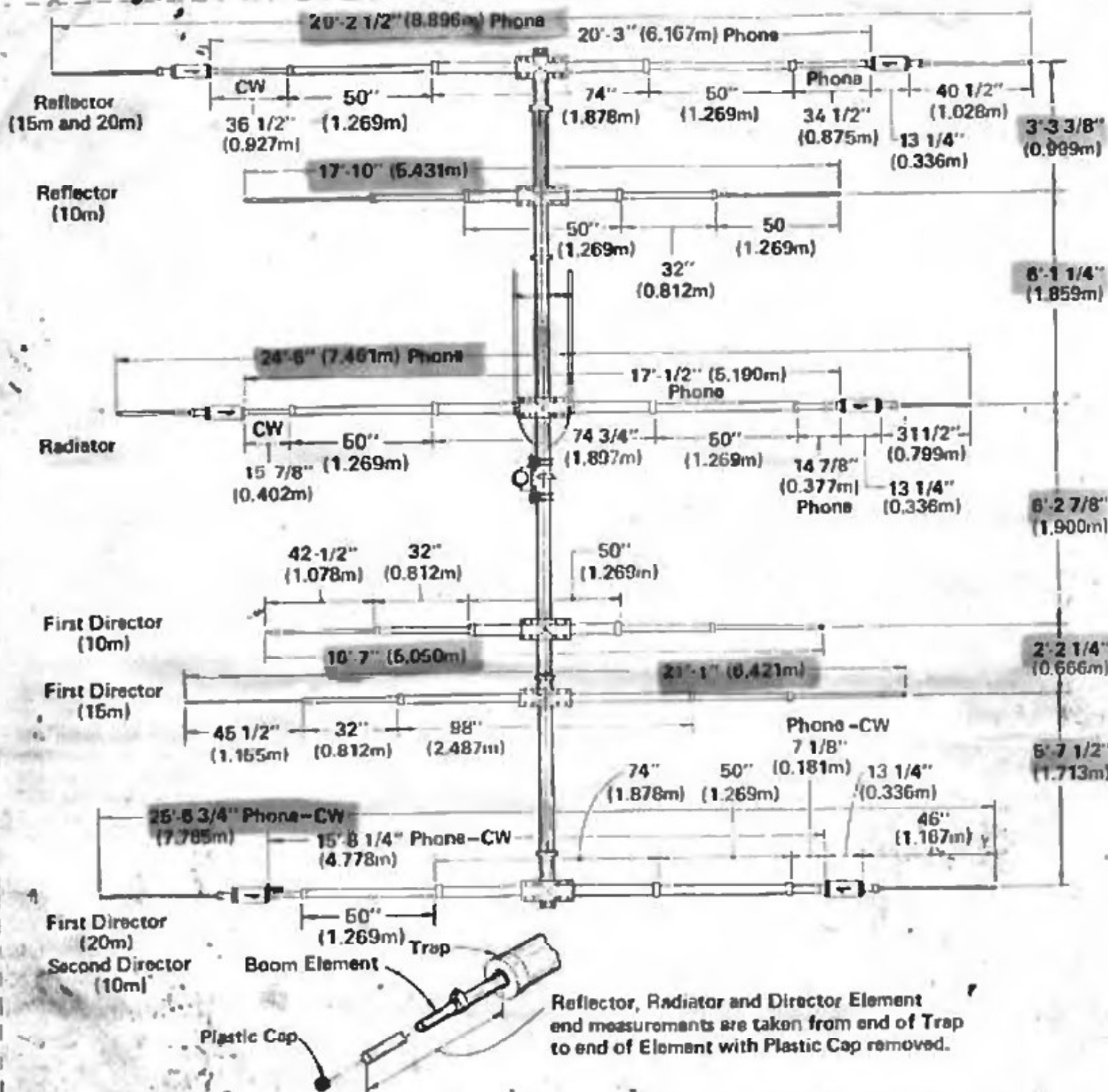
Figures 3 and 4 show a top view of the assembled antenna, and gives part numbers and principal dimensions for assembling and installing the elements. Refer to the parts list (sheet 2) for complete descriptions and specifications and to Figures 5 and 6 for specific assembly details and hardware call outs.

All elements are symmetrical. Dimensions given are from end of tubing to end of tubing. See Figure 1 for the correct locations of the elements on the boom.

FIGURE 3

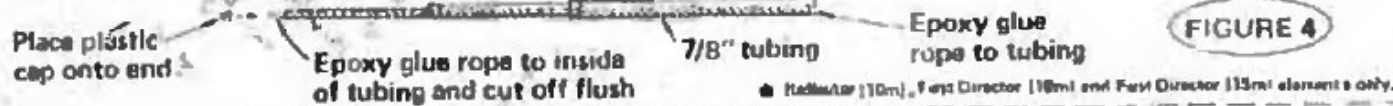
**SY36**

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APPROVED



Vibrations in your antenna due to light winds will cause the elements to sing and harden. If the elements over-harden they will become brittle and crack. In order to increase the life of your antenna, we recommend the use of 5/16" polypropylene rope threaded through the elements as described below.

Thread the rope through the 7/8" O.D. tubing. Epoxy glue the rope to the inside of the tubing which will have the mounting plates attached. After the glue has set, thread each piece of the assembly onto the rope (clamp, tubing, clamp, tubing, etc.). When the entire element is assembled, dimensioned, and all hardware tightened, epoxy the other end of the rope to the end tube. Cut the end of the rope flush with the tube and place the plastic cap on the end.

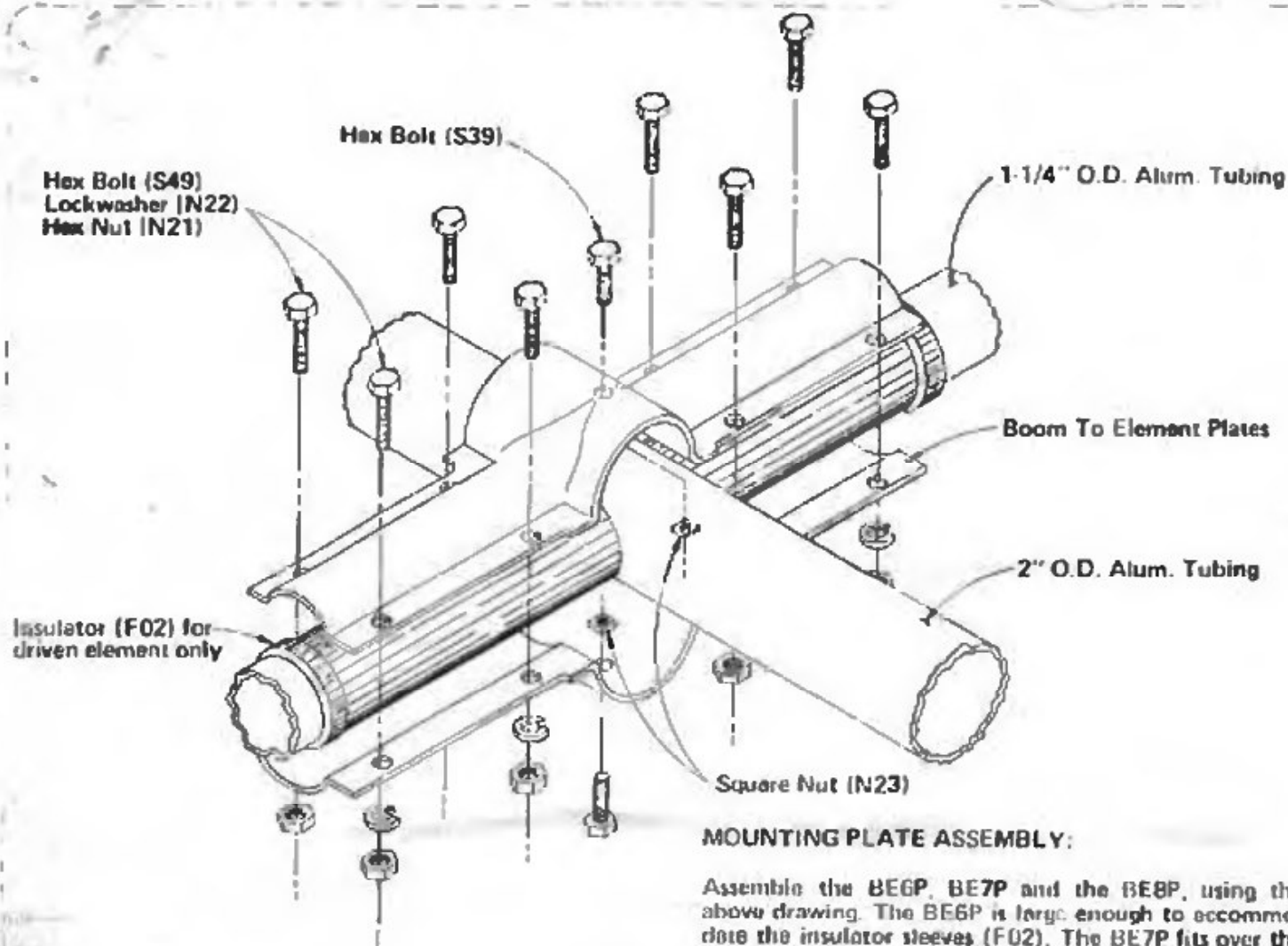


**FIGURE 4**

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APPROVED           

**SY36**

11-01-79 Rev.



#### MOUNTING PLATE ASSEMBLY:

Assemble the BE6P, BE7P and the BE8P, using the above drawing. The BE6P is large enough to accommodate the insulator sleeves (F02). The BE7P fits over the 1/4" O.D. alum. tubing, and the BE8P fits over the 1/8" tubing.

FIGURE 5

Assemble trap to element by inserting the machine screw through the hole in the trap.

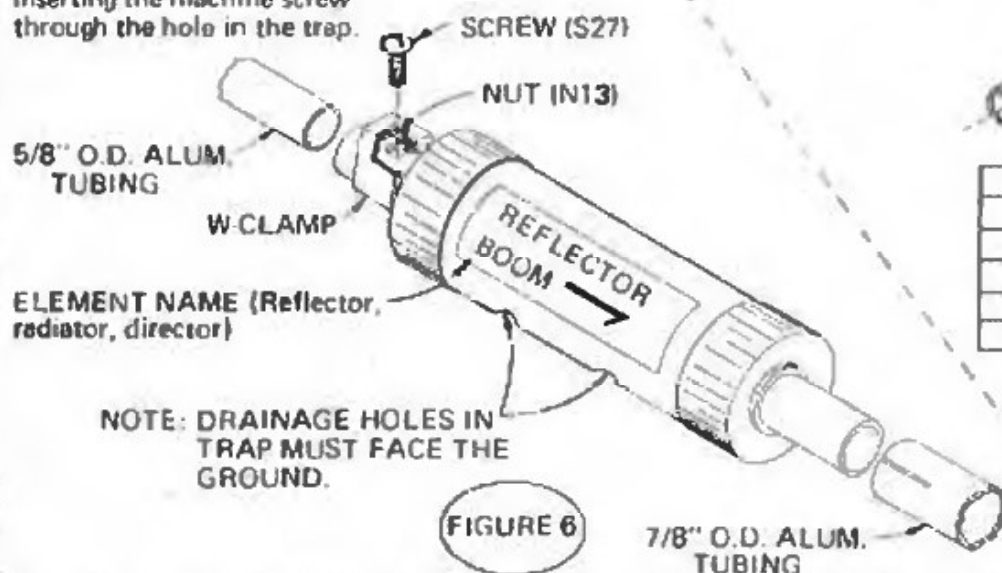
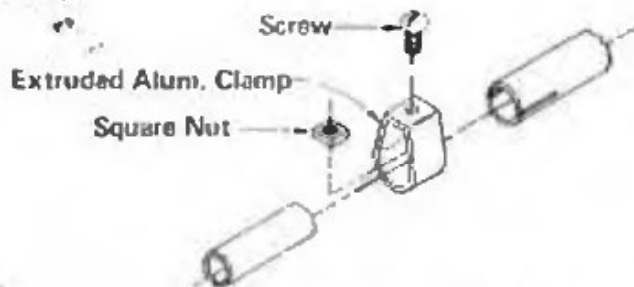


FIGURE 6



W-Clamp (Typical)

Clamp	Screw	Nut
W14	12-24 x 1/2"	12-24
W10	12-24 x 1/2"	12-24
W7B	12-24 x 1/2"	12-24
W34	12-24 x 1/2"	12-24
W5B	10-24 x 1/2"	10-24

DRAWN \_\_\_\_\_  
APPROVED \_\_\_\_\_

**SY36**



Hex Bolt (S49)  
Boom Strap (C19P)  
Lockwasher (N22)  
Hex Nut (N21)

Machine Screw (S21)  
Flatwasher (N26)  
Alum. Clamp D6 (C01)  
Boom Strap (C19P)  
Flatwasher (N26)  
Lockwasher (N12)  
Hex Nut (N06)

Beta Tubes (T115P)

Hex Nut (N06)  
Lockwasher (N12)  
Flatwasher (N26)  
Boom Strap (C19P)  
Beta Rod Strap (Z14P)  
Machine Screw (S21)

41"  
(1.040m)

Copper Braid

Center Conductor

Machine Screw (S32)  
Hex Nut (N25)  
Lockwasher (N14)  
Insulated Wire w/ Lug  
(Customer Furnished)  
Clamp (W14P)  
Square Nut (N13)

RFC1 Choke

Tape securely to boom. Make RF Choke by winding 10 turns of RG-8x or -Bu coaxial cable with a 6" inside diameter. (Diameter not critical).

Attach PL259 Connector and UG176 Reducer to this end of RFC1 (Customer supplied).



Wrap copper braid with electrical tape, then coat it with a silicon sealant or other weather proofing compound. When assembling the copper braid to the driven element do not allow it to touch the boom at any time.

FIGURE 7

SY36

wn EPW  
proved MS

## ANTENNA MOUNTING

The completed antenna mounts to a 2" O.D. mast (customer furnished) with 2" u-bolts, saddles, lockwashers and nuts, as shown.

Assemble and tighten the two inner u-bolts before assembling the outer u-bolts.

Boom to Mast Plate (P01P)  
with boom attached

Eyebolt (N18P)

2" U-Bolt (U01)  
2" Saddle (S01)  
5/16" Lockwasher (N02)  
5/16" Hex Nut (N01)

2" O.D. Mast  
(Customer Furnished)

FIGURE 8B

Vertical Guy  
Support (V03P)

Cut off excess

Wrap six or more times

Steel Guy Cable (WD2P)

Wrap six or more times

Guy Mounts (BG2P)  
18" from end of boom  
section (T113P)

FIGURE 8A

Secure with these  
nuts after tensioning

5/16" Hex Nut (N01)  
5/16" Lockwasher (N02)

Tension guys  
with these nuts

Eyebolt (N18P)

2" U-Bolt (U01)  
2" Saddle (S01)  
5/16" Lockwasher (N02)  
5/16" Hex Nut (N01)

Typical arrangement for all eyebolts

## GUY ASSEMBLY

Cut the guy cable into two equal lengths.

Assemble one 5/16" hex nut (N01) to each of the four eyebolts (N18P). Turn the nut all the way up to the eye - as far as it will go with light pressure only. These will be used to secure the eyebolts after guy tensioning.

Install two eye bolts in the top holes of the vertical guy support (V03P) - one eye in each direction. Install one eyebolt in the top hole of each of the two guy mounts (BG2P) - with the eyes towards the center of the boom. Install each bolt by inserting the end about 1/2" (12mm) through the hole, and threading a hex nut about six turns onto the end.

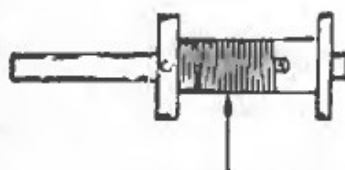
Install the guy cables between the eyes, as shown in this figure and in Figure 1. Allow approximately equal lengths of cable to extend through the eyes on each end, pull tight enough to remove the slack only, wrap six or more times, and cut off excess.

Tension the guys by tightening the nuts on the ends of the eyebolts. Tighten equally on both ends of each guy, and secure with the nuts on the opposite sides.

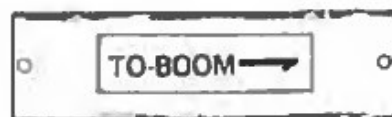
FIGURE B

DRAWN \_\_\_\_\_  
APPROVED \_\_\_\_\_

**SY36**



15 METER WINDING



10 METER WINDING

### INSTRUCTIONS FOR DISASSEMBLING TRAP

IN THE EVENT IT IS EVER NECESSARY TO IDENTIFY THE TRAP ASSEMBLIES, PROCEED AS FOLLOWS:

REMOVE THE PLASTIC CAPS FROM ENDS OF TRAPS.  
REMOVE SCREWS FROM ENDS OF TRAPS.

	<u>"To Boom" End</u>	<u>Away from Boom End</u>
REFLECTOR .....	0 Turns	24 Turns
RADIATOR .....	14 1/2 Turns	24 Turns
DIRECTOR .....	14 1/2 Turns	0 Turns

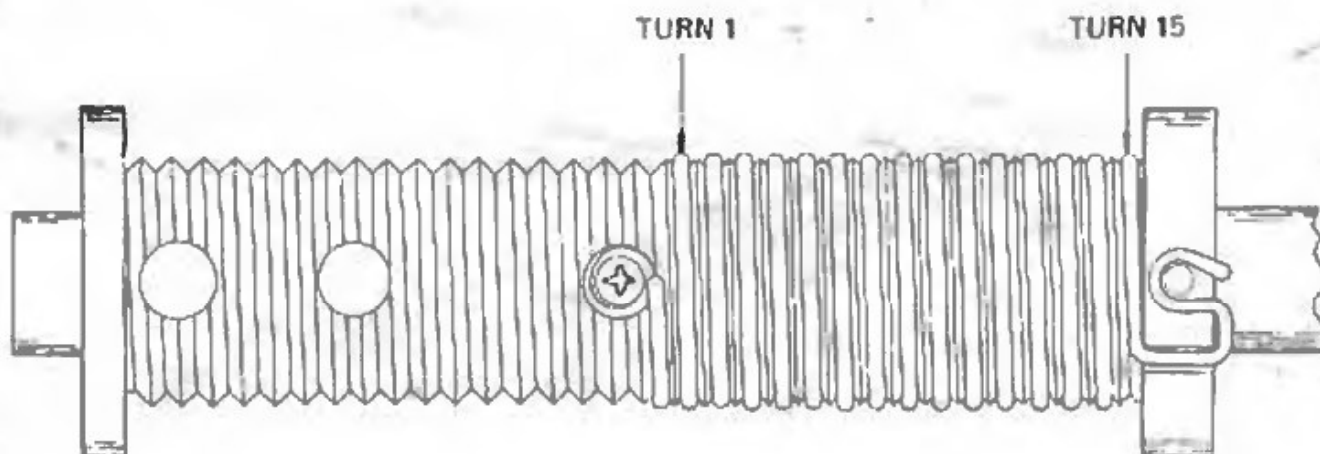


FIGURE 9

DRAWN E.T.U.  
APPROVED 07-81-79 RT

**SY36**